

Otitis Media Chronic Suppurative: Adult & Pediatric

Ears, Eyes, Nose, Throat and Mouth

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

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Background

Chronic suppurative otitis media (CSOM) describes a recurrent or persistent bacterial infection of the middle ear lasting for more than three months (Anti-infective Review Panel, 2019; Huether & Rodway, 2019; Porter, Dunphy, & Reinoso, 2019). Bacterial pathogens responsible for CSOM include *Streptococcus pneumoniae*, *Moraxella catarrhalis*, *Haemophilus influenzae*, *Staphylococcus aureus*, *Escherichia coli*, *Porteus*, and *Pseudomonas aeruginosa* (Huether & Rodway, 2019; Porter et al., 2019). Chronic suppurative otitis media is often multi-bacterial with *P. aeruginosa* and *S. aureus* being the most common pathogens, respectively (Bareeqa & Ahmed, 2018). Chronic suppurative otitis media can become a dangerous clinical problem if it spreads from being a simple mucosal disease to causing in-growth of stratified epithelium into the middle ear (cholesteatoma).

Cholesteatoma is a benign lesion that erodes adjacent bony structures and causes damage within the temporal bone, which can potentially be fatal (Russo et al., 2018).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- pediatric clients with an effusion that persists for greater than three months, suspected hearing loss, or retraction of the tympanic membrane;
- symptoms of cholesteatoma including otorrhea of three months or more duration, hearing loss, and/or dizziness;
- signs of meningitis (e.g., fever, headache, vomiting, photophobia, confusion and/or seizures);
- symptoms of mastoiditis (e.g., mastoid process erythema, tenderness, swelling with fever, protrusion of pinna); and/or
- facial paralysis (Interprofessional Advisory Group [IPAG], personal communication August 28, 2019; Russo et al., 2018; Dynamed, 2021).

Predisposing and Risk Factors

Predisposing and risk factors for CSOM include:

- unimmunized status,
- history of multiple episodes of acute otitis media,
- low socioeconomic status,
- malnutrition,
- high number of children in the household,
- daycare attendance,
- family history, and
- passive exposure to smoking (Dynamed, 2021; Porter et al., 2019).

Health History and Physical Exam

Subjective Findings

The circumstances of the presenting complaint should be determined. These include:

- decreased hearing or complete hearing loss,
- tinnitus,
- continuous or intermittent foul-smelling discharge from the ear for three months or more,
- headache,
- sensation of pressure in ear,
- itching in external auditory canal, and/or
- pain and fever (uncommon) (Bareeqa & Ahmed, 2018; Porter et al., 2019).

Objective Findings

The signs and symptoms of CSOM may include:

- tympanic membrane perforation,
- foul-smelling otorrhea,
- conductive hearing loss, and/or
- possible invasive granulation tissue on otoscope exam (Porter et al., 2019).

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- cholesteatoma,
- acute otitis media,
- otitis media with effusion,
- foreign body in external ear canal,
- chronic otitis externa, or
- temporal bone infection (Levi & O'Reilly, 2018).

Making the Diagnosis

The diagnosis is made when the history and physical examination support the diagnosis of CSOM (Bareeqa & Ahmed, 2018).

Investigations and Diagnostic Tests

Investigations and diagnostic tests are not typically required if the history and physical examination support the diagnosis of CSOM (Porter et al., 2019). Consider culture and sensitivity swab for chronic otorrhea or complex cases and include cultures to rule out fungi and mycobacteria (Porter et al., 2019).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to prevent complications and eradicate infection with aural toilet, which includes empiric topical antibiotics (Levi & O'Reilly, 2018). Long-term goals include healing/repair of the tympanic membrane to improve hearing (Bareeqa & Ahmed, 2018; Levi & O'Reilly, 2018).

Non-Pharmacological Interventions

The RN(AAP) should recommend, as appropriate, the application of heat or cold to the outer ear, which may help with discomfort (Porter et al., 2019) and removal of debris from the ear canal using the following techniques:

- Dry mopping:
 - Use a cotton ball or gauze wrapped around an ear curette and insert into the ear canal under direct visualization (Levi & O'Reilly, 2018).
- Ear wicking:
 - Clean the outer ear and the canal with a normal saline-soaked cotton ball or gauze and gently debride the area of debris and exudate; and
 - If the ear canal is significantly swollen, an ear wick can be made by gently twisting a 2.5 centimetre length of absorbent cotton or gauze and threading it into the canal. Left in place, the ear wick will facilitate administration of medicated drops to the distal part of the canal (Anti-infective Review Panel, 2019; Porter et al., 2019). The wick will eventually fall out as edema subsides or can be removed after two to three days. Following removal of the wick, the drops can be instilled directly into the ear canal (Anti-infective Review Panel, 2019; Porter et al., 2019).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of CSOM are in accordance with the *Anti-infective Guidelines for Community-acquired Infections* (Anti-infective Review Panel, 2019), *Antibiotic Prescribing for Acute Otitis Media and Acute Sinusitis: A Cross-sectional Analysis of the*

ReCEnT Study Exploring the Habits of Early Career Doctors in Family Practice (Dallas et al., 2017), Chronic suppurative otitis media: Clinical features and diagnosis (Levi & O’Reilly, 2018), and Inflammatory and Infectious Disorders of the Ear (Porter et al., 2019).

Clients with CSOM respond more frequently to topical therapy than to systemic therapy as long as regular cleaning of the external canal occurs.

Chronic suppurative otitis media without suspected cholesteatoma can be treated based on whether the ear is typically dry or wet (chronic discharge).

Antibiotics Dry Ear

Chronic suppurative otitis media with a dry ear is likely due to the same pathogens that cause acute otitis media and therefore can be treated with an antibiotic used to treat AOM. Note that ciprofloxacin and dexamethasone otic solution (Ciprodex™) is equally as effective as oral antibiotics with fewer systemic side effects.

	Drug	Dose	Route	Frequency	Duration
Pediatric (≥ 6 months of age) and Adult					
	Ciprofloxacin and dexamethasone otic solution (Ciprodex)	4 drops to affected ear	topical	b.i.d.	14 days
OR	Framycetin, gramicidin, and dexamethasone otic solution (Sofracort)	2-3 drops to affected ear	topical	t.i.d. to q.i.d.	14 days

Antibiotics Wet Ear

Chronic suppurative otitis media with a chronic discharging (wet) ear is likely to be polymicrobial (especially *P. aeruginosa*), therefore, initial treatment requires a combination of topical and oral fluoroquinolones. Consult a physician/NP for appropriate antibiotics that are safe in pediatrics.

	Drug	Dose	Route	Frequency	Duration
Adult (First Line)					
	Ciprofloxacin and dexamethasone otic solution (Ciprodex)	4 drops to affected ear	topical	b.i.d.	14 days
PLUS	Ciprofloxacin	500-750 mg	p.o.	b.i.d.	14 days
OR	Levofloxacin	500 mg	p.o.	once daily	14 days
Adult (Second Line)					
	Framycetin, gramicidin, and dexamethasone otic solution (Sofracort)	2-3 drops to affected ear	topical	t.i.d. to q.i.d.	14 days
PLUS	Ciprofloxacin	500-750 mg	p.o.	b.i.d.	14 days
OR	Levofloxacin	500 mg	p.o.	once daily	14 days

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Counsel about appropriate use of medications (dose, frequency, compliance, etc.) and aural irrigation.
- Recommend against using cotton-tipped swabs for cleaning.
- Recommend proper drying of ears after swimming, bathing, or showering and use of ear plugs when swimming, bathing, or showering.
- Counsel about proper hygiene of hearing aids, earphones, and ear plugs (Porter et al., 2019).

Monitoring and Follow-Up

Instruct client to follow-up in seven days and weekly to assess results from treatment and adherence. Treatment is considered to have failed if otorrhea continues after three weeks of therapy (Levi & O'Reilly, 2018).

Complications

The following complications may be associated with CSOM:

- permanent hearing loss,
- mastoiditis,
- facial paralysis,
- vertigo, and
- cholesteatoma (Anti-infective Review Panel, 2019).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section or treatment failure (IPAG, personal communication August 28, 2019).

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